Naval War College Review

Volume 36
Number 2 *March-April*

Article 1

1983

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by
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Soviet naval doctrine views antisubmarine warfare as "the basic experience of war at sea as a whole," and it says that "victory will be achieved by the one who will consistently know the location of the submarines of the opposing side and who has the necessary means at his disposal to destroy them."[1] Antisubmarine defense, or PLO (Protivolodochnaya oborona), is "a struggle against submarines in a maritime theater of military activities" (MTVD).* PLO is the "aggregate of combat operations of a formation or a group of warships as well as certain measures directed toward safeguarding warships, transports, and important coastal installations from submarine attack and toward preventing enemy submarines from conducting reconnaissance, laying mines, carrying out raids by landing parties, or engaging in other activities."[2]

ASW Concept and Submarines' Role

Between 1945 and the early 1960s the main emphasis in Soviet ASW was upon defense of the "offshore zone," that is, sea areas contiguous to the country's shores. A very large number of Soviet diesel-electric submarines built in the 1950s was then intended primarily for fleet area defense.★ They lacked, however, the sensors and weapons to be employed effectively against enemy submarines.

The introduction into service of the first US ballistic missile submarines armed with the 1,200-nm-range Polaris missile was the principal reason behind the drastic shift in Soviet naval policy and strategy which occurred in 1961-62. Afterwards, the Soviet Navy sought open-ocean ASW capabilities.

The anti-SSBN concept as it evolved in the 1960s envisaged a "near zone," and a "far zone" of defense. The near zone comprised a relatively narrow strip of water of undefined width bordering the country's shores, where

*Morskoy (okeanskiy) teatrov voyennykh deystviy.

★"Fleet area defense" here means the employment of submarines primarily against the enemy attack from across the sea, that is amphibious forces (in the late 1940s and the early 1950s) and carrier task forces (in the mid and late 1950s).

specialized ASW surface ships, aircraft and shore-based helicopters were to be employed. The far zone apparently extended from the outermost boundary of the near zone to the maximum range of the enemy's submarine-launched ballistic missiles. There, SSNs and land-based ASW aviation were to be the principal actors in searching for, tracking, and destroying the enemy SSBNs. Although Soviet open-ocean ASW capabilities were steadily improved in the 1960s and 1970s, they became, ironically enough, less and less adequate in neutralizing the threat to the fatherland from across the sea. The reason was that as the US submarines were retrofitted with newer and longer-range weapons, their operating areas were enormously increased. In order to detect, locate and destroy the US and other Western SSBNs, the Soviet forces would have had to search the vast spaces of the world's oceans, a task which would clearly have been beyond their capabilities, barring of course a long-sought breakthrough in submarine detection.

In the 1970s, some significant events took place which led to another change in the emphasis of Soviet ASW. First, in 1972 the Delta-class SSBNs armed with missiles of over 4,000-nm range entered service. These submarines could hit targets in the United States while remaining submerged in the Barents Sea and the Sea of Okhotsk. Second, by the late 1970s the role of the SSBNs, had been changed gradually from that of participating in the first nuclear exchange to that of late-war bargaining and influencing the peace terms. Hence, it was, and still is, of crucial importance to the Soviets to protect their own SSBNs in their sanctuaries and operating areas, both in peactime and during a general war.

In addition to surface ships and aviation, both the SSNs and the diesel-electric submarines are intended to carry out pro-SSBN missions. It seems safe to say that the anti-SSBN mission has been relegated to second place, partly as a result of the extraordinary significance Soviet SSBNs have within the framework of their nuclear strategy and partly because of the Soviet Union's still inadequate open-ocean ASW capabilities.

PLO specifically includes the protection of "naval bases and anchorages," warships, convoys and amphibious forces on the sea, and narrows and straits.[3] An antisubmarine defense zone, or ZPO (Zona protivolodochny oborony), is organized around a mobile objective or around any part of the coast where ASW forces are engaged in the search for and destruction of enemy submarines. A ZPO in turn is normally divided into "near" and "distant" defense sectors.

The best way of preventing enemy submarines from penetrating a defense zone is to establish antisubmarine barriers, or PLR (Protivolodochnaya rubezh), on the probable transit routes of the enemy submarines and in navigational narrows.[4] An ASW barrier consists of both a mobile, and a fixed defense system. Mobile forces consist of general-purpose submarines (SSNs/SSs), surface ships and craft, and patrol aircraft and ASW helicopters.

A fixed defense system usually includes one or more mine barriers, "means of detection," and antisubmarine nets.

Area defense is intended to prevent enemy submarines from carrying out attacks on Soviet SSBNs in their sanctuaries and operating areas, ballistic or cruise missile strikes on targets ashore, minelaying, torpedo or cruise-missile attacks against naval or commercial ships in coastal waters, reconnaissance, and the landing of commandos or frogmen.

The anti-SSBN missions can best be accomplished by continuous peacetime surveillance, including the tracking of ballistic missile submarines in the open ocean in order to destroy them at the very outset of a war. Nuclear-powered attack submarines, long-range aircraft, and AGIs are used for such missions now. However, although the SSNs and AGIs deployed in peacetime off the Western submarines' bases can learn the deployment schedules of their quarry, it appears that they are incapable, due to the almost insurmountable technical difficulties, of continuously tracking the Western SSBNs, once the latter have left for their operating areas.

The principal methods of area ASW include blockade of enemy submarines in their bases, combat patrols in the assigned "sea rayons"* or along the enemy submarines' probable deployment routes, and operations offshore, including the waters off Soviet naval bases, ports, and anchorages.

Blockade of the enemy's submarine bases, including those of the SSBNs, can be accomplished by deploying SSNs in ambushing positions at the base's approaches, establishing stationary barriers in narrows and straits to prevent the enemy submarines from reaching the open oceans, and using SSNs as mobile barriers on the probable transit routes of the enemy submarines in wider sea rayons. In the Soviet concept, patrols in the assigned regions and along the enemy submarines' probable deployment routes will be carried out primarily by SSNs, although "ship-search-strike groups" (KPUG)★ are expected to have a major role in the conduct of such missions.[5]

The Soviets apparently have great reservations about the effectiveness of *point defense ASW* because it restricts a defending submarine's freedom of action only to the proximity of the ships being protected.[6] They envisage the main objective of point defense to be, not destruction of the enemy submarines, but the frustration of their attacks. Surface ships and helicopters are regarded as the most effective force for conducting point defense ASW missions, while SSNs, together with aircraft, have the primary role in area defense.[7]

Search for enemy submarines is conducted by one's own submarines, surface ships, land-based and shipboard aviation, and "stationary means of

*A "sea rayon" (morskoy rayou) means a "sea area" or "sea zone" of undefined length and width and contiguous with the coast.

★KPUG (Korabel'naya poiskovo-udarnaya gruppa) is defined as an "operational-tactical" formation of destroyer- and frigate-size ASW ships intended to search, track, and destroy enemy submarines in the open ocean. Normally, a CG (or CHG) serves as the flagship.

detection." It can be carried out in the sea rayons (area search), on antisubmarine barriers, on call, and on "assigned strip" (search in point defense ASW).

Area search is applied when the precise location of the enemy submarine is uncertain, and is conducted by the combined efforts of all forces available.

Search on the barriers will be carried out principally by aviation and submarines along probable enemy submarine transit routes.

If initial contact with an enemy submarine is lost, then an on call search is conducted. For such tasks either patrol aircraft or helicopters, due to their fast reaction time and greatly superior speed over all other ASW platforms, will normally be used. Search in the "assigned strip" is conducted by shipboard or land-based helicopters and surface ships when these are employed in defense of larger warships, convoys, and amphibious ships at sea.[8] Soviet doctrine apparently does not provide for the employment of submarines in the screen of surface combatants or convoys.

In the Soviet view, the destruction of the enemy's submarines can be accomplished by missile strikes carried out by SSBNs and aircraft against his bases, ports, and anchorages, preferably at the outset of a war. Yet the Soviets are aware that under present-day conditions such strikes may not be effective, since most (if not all) enemy submarines will leave their peacetime bases during a time of heightened international tensions or national emergency.

Soviet doctrine envisages that enemy submarines can also be destroyed "directly" through independent actions of attack submarines, systematic actions of "ship-search-strike groups," daily patrol activity, point defense of warships, convoys, and amphibious forces, and minelaying.

Independent submarine actions are to take place at the approaches to enemy bases, where the hunters are to wait in ambush for enemy submarines as the latter depart for or return from combat patrol. The "ship-search-strike groups" can achieve the same end when used, along probable enemy submarine transit routes or in their operating areas, in sweeps along an antisubmarine barrier.

Daily patrol activity consists of area search conducted by "ship-search-strike groups" and aircraft in important areas of the world's oceans with the main objective of searching out and destroying enemy submarines.[9]

Soviet doctrine considers minelaying as one of the most effective methods of sinking enemy submarines. Aircraft and submarines will lay mines at the approaches to enemy bases and often in remote areas of the world's oceans, while surface ships will lay both defensive and offensive mine barriers in the coastal waters bordering the homeland.[10]

Tactical Organization

Regardless of their size, type of propulsion or main armaments, Soviet

attack submarines are categorized as submarines of "operational-tactical designation." This reflects the general character and significance of their missions. In contrast, ballistic-missile-armed submarines are classed as being of "strategic designation."

Depending upon their size, Soviet naval vessels belong to one of four ship "ranks" or categories. Thus, all nuclear-powered submarines are designated as 1st-rank ships, while large and medium-size diesel-electric submarines belong to the 2nd rank. All torpedo-armed attack submarines are classified as "atomic" (PLA),* "large" (PLV)★ or "small" (PLM).# Ship categories are not related to their COs' ranks, though it is true that in most cases ships in category 1 are commanded by a Captain 1st Rank (and some of them even by a Rear Admiral).

Except for SSBNs, the basic administrative and tactical unit for both submarines and surface ships is a pair. Each pair consists of sister ships, two Foxtrots and two Charlies, for example. The pair crews undergo together all the ships' training phases, both ashore and at sea. The pairs also carry out their regular docking or overhauls simultaneously. In the administrative chain of command, three pairs of submarines comprise a division, while two to three divisions in turn are organized into a submarine brigade, or BPL (Brigada podvodnykh lodok).

Attack submarines can be employed singly, in pairs, or in tactical submarine groups. The last of these usually consists of two or more pairs of the same class of submarine, intended to carry out a specific mission.

In conducting their ASW missions, the attack submarines may be employed either independently or in cooperation with other ASW forces.

Independent Missions

Continuous trailing of Western SSBNs after they have left their bases and are in their operating areas is one of the most important peacetime missions of Soviet ASW submarines, if not the principal one. Nuclear-powered submarines are considered best suited for such a role, owing to their practically unlimited range, great endurance, continuous high speed underwater, and deep-running capabilities. The main objective, of course, is to be able to destroy as many SSBNs as possible at the very beginning of a war. However, the Soviets realize that it is hopeless to try to carry out such tasks for the entire duration of a patrol, even if more than one Soviet SSN were to be used for each Western SSBN.[11]

Since continuous trailing would be nearly impossible, Soviet SSNs, sailing at a "noiseless" speed, are to ambush the SSBNs at the approaches to their bases. Two or more SSNs would normally be employed for such tasks, each

*PLA—Podvodnaya lodka, atomnaya
★PLV—Podvodnaya lodka, velikaya
#PLM—Podvodnaya lodka, malaya

operating in its own patrol area, separated from the other by an "off-limits" zone. The latter's width varies, but as a rule has to provide an overlap in the maximum effective sonar range between the SSNs and to allow for navigational error. The SSNs are prohibited from entering each other's zone, in order to preclude any possibility of one attacking the other.

Patrols in "assigned regions" would be established on the probable transit routes of enemy submarines in the open ocean, in sea rayons, in narrows, in straits, and at chokepoints. Such patrols can be either stationary or mobile in character. The latter mode is used if the number of submarines available is not sufficient to cover the width of the patrol area. The submarines can be deployed in one or more patrol lines, and by taking a position astride the probable course of the enemy submarine.

The submarines employed in assigned regions would have their own patrol zones, where each of them would sail on an independently chosen course, speed, and diving depth. Just as in ambushing missions, patrol zones are to be separated from each other by an off-limits zone. The number of submarines to be employed for patrol will depend upon the width of the area to be patrolled, the prevailing sonar conditions, and the search rate of each individual submarine.

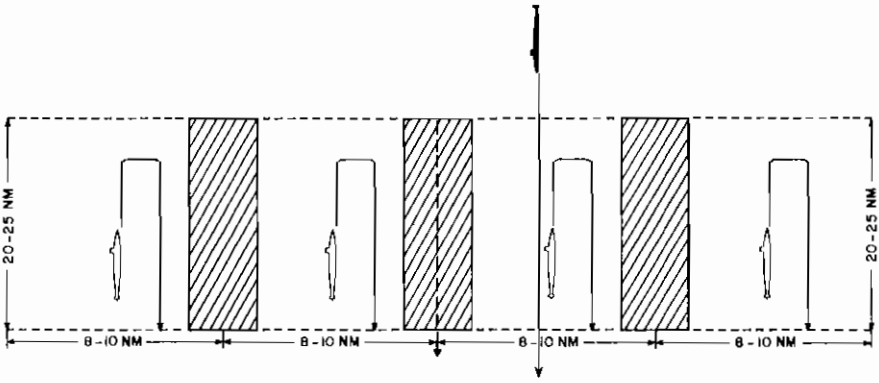
Soviet doctrine envisages that submarines on patrol in assigned regions could sail on a course parallel, astride, or zigzag in respect to the estimated course of the enemy submarines. The choice among these would depend upon the speed ratio between the Soviet and the enemy submarine. If the estimated speed of the Soviet submarine is less than or equal to that of her opponent, then she would sail parallel to the probable course of the enemy. Then the detection probability is lower; and if the enemy submarine is detected, the time for classification, localization, and torpedo attack could be extremely short due to the high speed of approach in cases where the submarines are on the opposite course.

If the Soviet submarine enjoys a margin of speed, then a course astride that of the enemy submarine is recommended. The advantages of such a patrol mode lie in the greater search width, the fact that fewer submarines would be needed to cover a given patrol line than in the parallel case, the provision of more time for classification and localization of the contact, and the opportunity of obtaining a better tactical position for carrying out a torpedo attack. The disadvantages are that such a mode lacks depth, thus increasing the possibility that the enemy submarine will break through undetected, and it is difficult for submarines fitted only with stern antisubmarine tubes to carry out an attack.

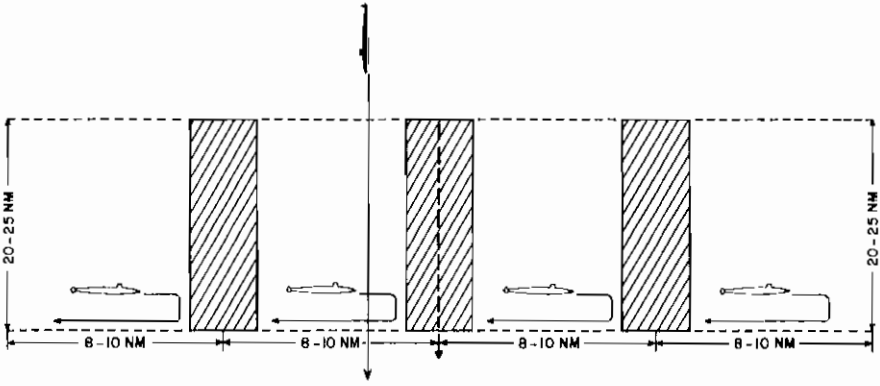
Zigzag patrolling of the probable course of the enemy submarine is a compromise solution which is applied when both greater submarine search width and speed of advance are required. Maneuvering patrols in "assigned regions" are conducted much like stationary patrols, the only difference

SOVIET SUBMARINE PATROL METHODS

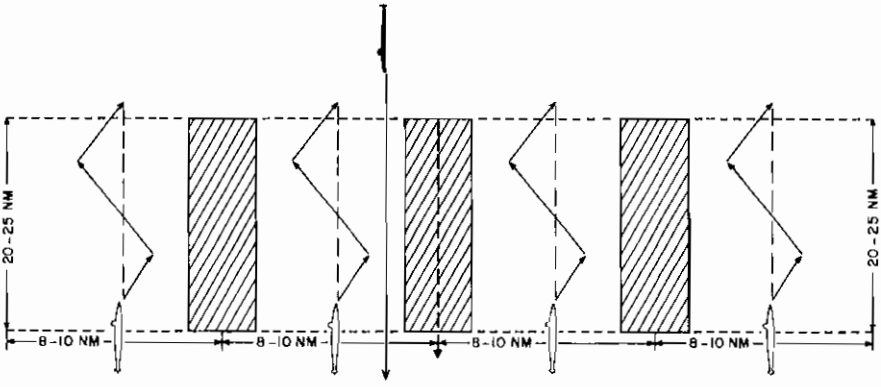
A: WHEN THE SOVIET SUBMARINE'S SPEED IS LESS THAN OR EQUAL TO THE ESTIMATED SPEED OF ENEMY SUBMARINE, SHE SAILS PARALLEL TO THE POSSIBLE COURSE OF THE ENEMY.



B: WHEN THE SOVIET SUBMARINE HAS SUPERIOR SPEED UNDERWATER, SHE SAILS ASTRIDE THE POSSIBLE COURSE OF THE ENEMY.



C: THE COMPROMISE SOLUTION, SAILING A ZIG-ZAG COURSE.



LEGEND:

OWN SUBMARINE — ENEMY SUBMARINE'S PROBABLE ROUTE — "OFF-LIMITS" ZONE

DISTANCES GIVEN ARE FOR PATROL ZONES OF DIESEL-ELECTRIC SUBMARINES. SSN PATROL ZONES ARE LARGER.

being that the patrolling area is steadily moved in the direction of the oncoming enemy submarine.*

Soviet SSNs are also deployed independently on "mobile screens" for area search on probable transit routes of the SSBNs in the open ocean. One SSN can cover a front of approximately sixty nautical miles when using her sonar in a passive mode. The optimum search speed of the SSNs is considered to be from five to fifteen knots. Yet, despite the SSN's high search rate, it is apparently believed that a mobile screen would have great difficulty in detecting and locating enemy SSBNs in the vast areas of the world's oceans.[12]

Minelaying missions will be conducted predominantly at the approaches to enemy naval bases and in the straits or narrows through which the enemy submarines probably transit. Submarines can lay mines with a greater degree of concealment and precision than can aircraft. Moreover, upon arrival at an area the submarine commander can observe the situation carefully and lay mines along the enemy's most probable route. In the Soviet view, mines have an important place among ASW weapons, especially if they are fitted with nuclear charges.[13]

As a rule, when employed against enemy submarines the Soviet SSNs/SSs use their sensors in a passive mode and patrol at slow speed. This, it is believed, significantly enhances the covertness of their actions and their chances of achieving surprise. The diesel-electric submarines are considered to be effective for ASW missions along antisubmarine barriers, and if used in narrows and straits, due to their high maneuverability and low self-generated noise. Submarines on patrol usually proceed at "noiseless" speed, that is, at a speed which makes it impossible to detect their generated noise at a distance greater than 1,500 feet and which produces, at a distance of 150 feet from the submarine, a noise level not exceeding 26 db. Minimal "noiseless" speed is the one at which the intensity of the "hydrodynamic noises" exceeds the intensity of the noise generated by the submarine's mechanisms, and it amounts roughly to 0.4–0.5 of "noiseless" speed. The maximum "noiseless" speed is termed as the one at which the intensity of the hydrodynamic noises exceeds the intensity of the submarine's structural noise.★ Such a speed approximates 0.8 of the "critical" speed. The latter is a speed at which there is a rapid increase of the hydrodynamic noises, that is, the occurrence of cavitation.

In the Soviet view, " . . . despite the presence of missiles, torpedoes are . . . practically becoming the basic type of weapons of submarines in warfare and with the submarines of the enemy."[14] Soviet doctrine prescribes

*Such patrols are established on the probable transit routes of the enemy submarines; that is, where there are some firm indications that the enemy submarines are using a certain area for their transit to combat patrol zones or for return to their bases.

★In the Soviet definition, "hydrodynamic" noise is caused by the submarine's movement through the water, while "structural" noise is generated by the submarine's machinery plant, generators, crew, etc.

that an SSN or SS has to detect the target at the maximum effective range of its sonar, carry out its attack without any delay, fire torpedoes or Subroc-type missiles at their maximum range, obtain a hit with a first salvo, and disengage rapidly from the opponent after attack by using its superior underwater speed and deep-running capabilities.

Cooperation with Other ASW Forces

In the Soviets' view, it is wrong to rely in ASW upon surface ships, submarines, patrol aircraft, or helicopters alone. Rather, they believe that a successful struggle with enemy submarines can be conducted only with the combined offensive and defensive operations of "all existing forces and means," with SSNs in the frontline.[15]

Soviet naval theoreticians stress time and again that success in ASW will depend upon both cooperation among submarines, surface ships, and aviation, and centralization of the forces' control. In regard to the objective to be accomplished, their doctrine distinguishes tactical, operational, and strategic cooperation of forces.

Tactical cooperation is organized among individual ships, submarines, and aircraft or their larger respective units. Such cooperation can be carried out among tactical-size one type* units or "mixed" (composite) forces. Tactical cooperation has to prevent mutual interference in the movements and employment of the sensors and weapons of the ships, submarines, and aircraft. Moreover, through tactical cooperation the forces can obtain favorable positions and select the proper mode of attack, thus achieving an intensity and destructive power of strikes exceeding the simple sum of attacks carried out by them singly.[16]

Operational cooperation in Soviet naval doctrine involves the coordination of tactical-size one-type units of surface ships, submarines, and aircraft, or composite forces carrying out separate tasks, but aimed at accomplishing an overall operational objective. Such cooperation can be organized among forces engaged in a single operation, but their tasks can be carried out in different sea rayons. Thus, the forces conducting a mission in a secondary sea rayon must at least indirectly contribute to the success of forces engaged in a primary sea rayon. There might be cases wherein operational cooperation is necessary among forces participating in different operations which are taking place in the same sea rayons. In such cases, the forces carrying out the attacks first must by their actions create favorable conditions for the forces attacking later. In accomplishing the overall operational objective, the forces may carry out their operations either simultaneously or in succession, and against the same or different enemy units.

Strategic cooperation is organized among "operational-tactical"-size

*A "one-type" unit would be a squadron of frigates only, or destroyers, or cruisers, or, in the case of aviation, a patrol squadron or an ASW helicopter squadron.

units (fleets) and other services or branches of the Soviet armed forces on principles similar to those applied in operational cooperation, but for the purpose of accomplishing strategic objectives.[17] In the Soviet view, the capabilities of various types of naval forces, primarily SSNs, in carrying out strategic tasks have been greatly increased in recent years. Both anti- and pro-SSBN missions have, in the view of the Soviet naval theoreticians, strategic character.

In the early 1970s, there was still a curious lack of interest shown by the Soviet naval theoreticians, in contrast to those in Western navies, with regard to joint tactical employment of submarines and other ASW forces. The prevailing view then appeared to be that such cooperation "will be possible with the substantial improvement of the means of underwater communications and identification."[18] However, in recent years, at least from what may be deduced from the articles published in the Soviet military press, it seems likely that procedures for the joint tactical employment of Soviet submarines and other ASW platforms have been to some extent worked out. Yet, the joint employment of SSNs/SSs and other ASW forces reportedly includes only the search, detection, and classification of the target. The localization and destruction phases are apparently conducted independently by Soviet submarines so as to "avoid attack on own submarines by their own anti-submarine defense forces."[19]

The submarines can carry out their ASW missions in cooperation with surface ships, or aircraft, or both.

Submarines and Surface Ships. Soviet SSNs/SSs are employed in combination with surface ships for two principal tasks, open-ocean area search for enemy submarines and point defense of their own SSBNs. In coordinated area search missions, the Soviet SSNs are to be deployed well ahead of the "ship-search-strike" group. They would apparently be employed for a long-range search. Their sonar would be used, presumably, in a passive mode so as not to reveal their position prematurely. If and after contact with an enemy submarine has been established, the Soviet SSN would attack without delay and at the maximum effective range of her torpedoes. If the attack failed, the SSN would transmit the target data to the nearest surface ship by using own sonar. Then the SSN would leave the immediate area in order to avoid being attacked by own forces, and would not play any role in the localization and destruction phase. However, it appears that the transmittal of the target data by an SSN to surface ships is only recommended and is not mandatory. If this is true, it shows that actually a very limited degree of tactical cooperation between the submarines and surface ships is envisaged. The reason is probably that the system of exchanging information between a submerged submarine and a surface ship is still inadequate.

An SSN is apparently employed as a close-in screen for each SSBN during

the latter's transit from base to operating area. Surface ships and aviation may also be so employed. The SSN is then positioned forward of the SSBN. She proceeds at a slow speed and conducts a passive sonar search for any enemy SSN waiting in ambush. The SSN has the task of detecting the enemy SSN and then vectoring the surface ship to the target by sonar communications. The SSBN is to remain undetected, but if her position is revealed to the enemy, she then has to take evasive action and, using the maximum speed, "clear out to conceal herself in the ocean depths."[20] In the Soviet view the problem of maintaining secrecy in SSBN operations is "becoming particularly complex and acute . . . and its role is growing since in modern warfare success will be determined largely by surprise, unexpectedness of action and conserving of one's forces until the attack is delivered."[21]

Submarines-Patrol Aircraft. In the 1960s Soviet naval theoreticians considered that joint employment of submarines and ASW aircraft was " . . . a complicated type of cooperation," which "can be successful only under the conditions of reliable two-way communication between submarines and aircraft." In order to achieve "reliable and fast-operating means of mutual identification and a highly worked-out level of cooperation, precise knowledge by a submarine and aircraft of their location and a position relative to each other" was required.[22]

By the early 1970s the Russians apparently had not succeeded in resolving the problem of communications between submerged submarines and aircraft. At that time, to "hold joint combat training in the same zone or to allow flights of aircraft over regions patrolled by submarines" was prohibited. As a rule the adjacent patrolling areas of submarines and aircraft were separated by an "off-limits" zone.[23]

In the late 1970s, however, some Soviet sources implied that the problem of a reliable and secure two-way communication link between a submerged submarine and aircraft had been resolved, possibly by the use of radio sonobuoys.[24] Yet, another Soviet source claimed that the "problem of reliable tactical communication with [submerged] submarines . . . is still far from being resolved."[25] Despite these contradictory statements, it seems very likely that the problem has indeed been satisfactorily resolved in recent years.

The joint employment of submarines and aircraft in carrying out ASW tasks can take place in either separate, but adjacent patrol zones, or in the same patrol area. In coastal ASW aircraft are normally assigned a zone in front of the submarine patrol area. Between these two zones there is an off-limits area. The latter's width is determined by the average extent of the navigational error by both submarines and aircraft in computing their position, by the maximum effective range of the aircraft's sensors, and by the destructive radius of the aircraft's weapons. As a rule submarines and aircraft carry out missions independently in their assigned patrol zones. However,

they have to inform the command post ashore about the whereabouts of the enemy submarine once she has been detected. Just as when she operates with surface ships, if a submarine detects the enemy submarine, she has to attack immediately and at the maximum effective range of her torpedoes. In case her attack fails, she informs the command post ashore which then orders aircraft to carry out the attack.

When submarines and aircraft are employed in the same patrolling area, their cooperation can be conducted in three basic variants. In one variant, which seems to be fairly common, the submarine conducts her search independently, then upon detection of the enemy submarine, attacks without any delay. Should the submarine be unable to repeat the attack for any reason, she must reestablish contact and track the enemy submarine while transmitting the target's data to aircraft. The latter then pursues and carries out its attack independently. In a slightly different variant, the submarine sends the target's data to the command post ashore, which then retransmits to aircraft. In the third variant, the methods are the same as those described above, except that if an aircraft has failed to destroy the enemy submarine, it vectors other aircraft (maintained at readiness ashore) to the target's probable position.

Submarines-Aviation-Surface Ships. In the early 1960s Soviet naval theoreticians argued that nuclear-powered submarines had become a "universal weapon for naval warfare." However, by the late 1960s the view already prevailed that the hitherto great reliance upon nuclear-powered submarines had to end, and a truly coordinated ASW forces team concept should be adopted.[26] The theoreticians then were apparently convinced that the "location of submarines and their destruction . . . must be conducted on the transit routes of convoys and naval forces by composite "air-ship-search-strike groups." The latter include patrol aircraft, shipborne helicopters, SSNs, and fast escort ships.[27] The Soviets, in fact, came to regard a need for combined and coordinated employment of all available ASW forces as espoused and practiced by the US and other Nato navies, but only some ten years later.

Soviet doctrine envisages that theater-wide operational cooperation includes joint actions on the open ocean, on the "anti-submarine barriers," and in the coastal zone.[28]

Cooperation between ASW forces in the open ocean comprises joint employment of aviation, submarines, and surface ships, on the transit routes of enemy SSBNs. The SSNs will then be employed only for long-range sonar search, and they are to carry out attacks independently if the opportunity arises. In the Soviet view "full . . . cooperation of nuclear-powered torpedo-armed submarines with other ASW forces is considered possible, basically [only] in the stages of search, detection and classification of underwater contacts."[29] In one scenario described in 1981 a patrol aircraft,

basically [only] in the stages of search, detection and classification of underwater contacts."[29] In one scenario described in 1981 a patrol aircraft, after laying down a sonobuoy "barrier," informed a submarine (presumably via a sonobuoy) of the "barrier's" precise position. After the aircraft had established the initial contact, the target's data were transmitted to the submarine. The latter began to search and carried out an attack, always informing in advance the commander of search forces on board a surface ship of her actions.

Activities intended to prevent enemy submarines from breaking through the antisubmarine barrier normally will involve submarines, surface ships, and aviation. As under other circumstances, each of these forces will be employed in a separate, but adjacent patrol zone, so as to preclude any possibility of mutual misidentification and attack by friendly forces. SSNs/SSs can be deployed in either the outermost patrol zone or in a patrol area between the zones assigned to aviation and surface ships. In either case they operate in the fashions already described. When they communicate they do so directly with the nearest surface ships.

Submarines, aviation, and surface ships will be similarly employed in antisubmarine defense of a sea rayon contiguous with the country's coast. Torpedo-armed conventionally powered submarines and aviation will be assigned to the outermost patrol areas, while surface ships and ASW helicopters will patrol to seaward of the stationary defense system. The latter as a rule consists of deployed sonobuoys or bottom-laid hydroacoustic listening devices, with one or more mine barriers behind them. The narrow strip of water separating the coast from the mine barrier would be patrolled intermittently by small ASW ships or craft and land-based helicopters. The width of the coastal ASW defense zone varies, but generally is reportedly about 30-40 nm wide. There would be little if any real three-way or even two-way "close cooperation" of forces there. Submarines, for example, would use their sonar passively, and upon establishing contact would vector surface ships or aircraft which would then pursue and carry out an attack against the detected enemy submarines.

Conclusions

Soviet ASW doctrine is offensive in nature and wide in scope. Nuclear-powered torpedo-armed submarines have been intended for carrying out open-ocean ASW missions ever since the anti-SSBN concept evolved in the early 1960s. Although the continuous trailing of Western SSBNs in peacetime is regarded as the main precondition for the ultimate success of the anti-SSBN concept, the Soviets have realized that such missions are presently beyond the capabilities of their SSNs.

In tactical doctrine the SSNs are, together with aviation, intended primarily as the first line in open-ocean ASW. Torpedo-armed diesel-

electric submarines are considered as very useful for ASW missions in sea rayons close to the country's shore and for patrols along antisubmarine barriers, or at "choke" points, that is, where it is not possible to employ the SSNs.

After the introduction of the Delta-class in the early 1970s, protection of the SSBNs in their sanctuaries and operating areas gradually emerged as the principal task of Soviet ASW forces both in peacetime and in wartime. Yet, the anti-SSBN mission was not abandoned.

It is emphasized that the highest degree of coordination and cooperation among all available ASW forces is required if success against enemy submarines is to be assured. However, it seems that in practice "cooperation" (vzaimodeystviye) and "joint action" (sovmestniye deystviye) amount to nothing more than the independent actions of surface ships, submarines, and ASW aircraft toward the accomplishment of an "operational" objective. There is little if any elaboration in Soviet writings regarding how "close cooperation" (tesnoye vzaimodeystviye), that is, truly tactical cooperation of ASW forces, is to be achieved. This is not surprising, since the problem of secure and reliable communications between submerged submarines, aircraft and surface ships apparently remains largely unresolved. This precludes the joint employment of submarines with other ASW forces in the phases of localization and destruction of detected enemy submarines. However, the "cooperation" of Soviet ASW forces may be transformed into "close cooperation" in the future if and when a secure, rapid, and reliable method of communicating with submerged submarines is found. Regardless of future developments, the role of submarines, particularly SSNs, in the Soviet ASW concept is not only assured for the present but bound to be increased in the years to come.

Notes

1. V.G. Yefremenko, "Razvitye i sovershenstvovanye protivolodochnykh syl i ikh taktiki [The Development and Perspective of ASW Forces and Their Tactics]," *Morskoy Sbornik*, October 1970, pp. 16-23.

2. *Sovetskaya Voyennaya Entsyklopedya* [The Soviet Military Encyclopedia] (Moscow: Voyennoizdat, 1978), p. 598.

3. *Ibid.*, p. 596.

4. A.I. Rodionov, *Udarnaya sila flota* [The Strike Forces of the Navy] (Moscow: DOSAAF Press, 2nd edition, 1977), p. 103.

5. B.I. Rodionov, *Protivolodochnye sily i sredstva flotov* [ASW Forces and Means of Navies] (Moscow: Voyennoizdat, 1977), pp. 106-107.

6. *Ibid.*, p. 106. In other words, this means that the enemy submarine's freedom of action is restricted only in the proximity of the target's inner and outer ASW defense zones, but it is not in danger elsewhere. What the Soviets imply is that point defense ASW as a method is too defensive. That is their major criticism of Allied ASW in World War II.

7. B. Komkov and Yu. Bo'lshakov, "Nadvodnye korabli protiv podvodnykh lodok [Surface Ships Against Submarines]," *Morskoy Sbornik*, July 1976, pp. 88-90; I. Kuz'min, "Razvedka atomnykh raketnykh podvodnykh lodok [Surveillance of Nuclear-Powered Missile Submarines]," *Morskoy Sbornik*, May 1979, p. 70.

9. B.I. Rodionov, pp. 108-109.

10. *Ibid.*, p. 109; I. Bykhovskiy, "Ispol' zovaniye minnoga oruzhiya s podvodnykh lodok [The Use of Mine Weapons from Submarines]," *Morskoy Sbornik*, July 1977, p. 26.
11. Andrew W. Hull, "Potential Soviet Response to the US Submarine Threat in the 1980s," US Naval Institute *Proceedings*, July 1978, p. 27; A.A. Kvitnitskiy, *Protivolodochnoye oruzhye i ego nositely* [Antisubmarine Weapons and Their Platforms] (Moscow: DOSAAF Press, 1973), p. 81.
12. Kvitnitskiy, pp. 114-115; I. Kustsayev, "Samolety protiv podvodnykh lodok [Aircraft Against Submarines]," *Morskoy Sbornik*, December 1974, pp. 86-90.
13. Bykhovskiy, p. 26; Kvitnitskiy, pp. 23-24.
14. Kvitnitskiy, p. 18; I.N. Potapov, *Nauchno-tekhnicheskiy progress i flot* [Scientific-Technical Progress and the Fleet] (Moscow: Voyennoizdat, 1977), p. 61.
15. G. Kostev, "Bitva pod vodoy [Combat Underwater]," *Morskoy Sbornik*, March 1973, p. 38.
16. G. Kostev, "Vzaimodeystviye—vazhneyshniy printsip ispol'zovanii sil [Coordination—The Most Important Principle in the Employment of Forces]," *Morskoy Sbornik*, February 1974, p. 29.
17. *Ibid.*, pp. 30-32.
18. Kvitnitskiy, p. 84.
19. *Ibid.*, p. 16.
20. "Tikhookeansky," *Krasnaya Zvezda*, 26 August 1980.
21. "Admiral [RAdm. A. Mikhaylovsky] Discusses Tactical Problems in Submarine Warfare," *USSR Daily Report* (Foreign Broadcast Information Service), 2 July 1974, p. V1.
22. N.I. Suzdalev, *Podvodnyye lodki protiv podvodnykh lodok* [Submarines Against Submarines] (Moscow: Voyennoizdat, 1986), p. 149.
23. Knitnitskiy, p. 89.
24. A. Lyalikov, "Tendentskii razvitiya sredstv dal'nego obnaruzheniya podvodnykh lodok v VMS SShA [Trends in the Development of the Means for the Long-Range Detection of Submarines of the US Navy]," *Morskoy Sbornik*, December 1977, p. 90; N. Radchenko, "Naval Duels on a Screen," *Znamenots*, April 1981, pp. 5-6.
25. B.I. Rodionov, p. 116.
26. Lyalikov, p. 90.
27. Komkov, p. 90.
28. B.I. Rodionov, pp. 115-117; Kvitnitskiy, pp. 83-84.
29. Radchenko, pp. 5-6.

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Ψ

SecNav's Guests

"The Grand Council of the Union League met tonight and did nothing of moment."

"The Officers of the Russian Fleet were entertained tonight by the Sec. of the Navy. They have vast absorbent powers and are fiendishly ugly. I grieve to say that M me Lissovski is not an exception."

- John Hay, secretary to President Lincoln, December, 1863.